

# **PART C – OFFICE PRACTICES AND PROCEDURES**

## **SECTION C1.00 – PROJECT CONSTRUCTION DIARY**

**C1.01 General.** A Project Construction Diary is considered the official record of the daily events pertaining to a given project. A Diary must be maintained for every project. The Project Construction Diary must contain a complete record of the Project, starting with the first chargeable day, even if the Contractor begins operations at a later date, and continuing through the date when all field operations are complete, including final inspection and completion of all punch list work. The Inspector in charge normally records all pertinent information obtained from the Inspector's Daily Reports in the Diary. A sample of an Inspector's Daily Report is in Part H. If recording information in the Diary is delegated to another inspector, the Inspector in charge is still responsible for its compilation. The Inspector's signature or initials must appear in script (not printed) in the space marked "Recorded By." Typical pages from a Project Construction Diary are illustrated in Part H.

The Diary should be concise and complete. Entries should be made daily, and the Diary should always be current. The daily proceedings should not be too long or too brief, but all important information and oral and written instructions related to the Contract should be permanently recorded in ink. Whenever separate records of daily events are compiled elsewhere by individual Inspectors, the pertinent information should be transferred into the official Project Construction Diary. The Diary must be factual; it should not contain information "as-remembered" by the Inspector unless it is so noted. "As-remembered" information should be the exception, not the rule.

The Diary should include:

- (a) weather information
- (b) the nature and location of all work
- (c) personnel and equipment employed
- (d) materials received or approved
- (e) oral and written instructions or approvals given to the Contractor
- (f) milestone dates, such as traffic pattern shifts or partial opening of the Project
- (g) visitations to the Project site by Department personnel
- (h) all other information as outlined in the "Recording Instructions" included in the front pages of each Diary.
- (i) Important Contract dates such as the Award date and the first day of Work

Representatives from the District Construction Engineer will occasionally review the Diary to determine if, in their opinion, it is complete and accurate. These reviews are to be noted on the page in the Diary corresponding to the date the review was made.

In conclusion, the Project Construction Diary is the single most important document prepared by the Inspector. The instructions for maintaining the Diary contained therein should be followed, and the sample page should be used as a guide for proper recording.

When the Project is completed, the Diary will be reviewed and approved by the Area Engineer/Construction Manager, after which it will be submitted to the District Construction Engineer with the final estimate. The Diary will be reviewed by the District Construction Engineer's staff and then permanently filed.

## SECTION C2.00 – PROJECT RECORDS

**C2.01 General.** Adequate records are of the utmost importance for all projects. Records are necessary for basic control of the Contract during construction, as well as to substantiate past directives, decisions, and controversial items or actions whenever a question concerning these may arise later. The records are valuable when debating a contractor's claim, particularly when legal action is instituted. Records should not be considered an unnecessary burden, but rather an integral part of a successfully constructed project. Memory cannot replace valid, permanent records.

Records required for basic control of projects can be classified into five categories: preliminary, progressive, production, miscellaneous, and final. The following subsections list the records most frequently encountered and should prove helpful for record control. It should be noted, however, that not all types of records listed are always applicable. Instructions and explanations for each type of record are not included in these subsections. Instructions and explanations for the more significant records are described elsewhere in the Manual.

### C2.02 Preliminary Records.

- (a) Records supplied by the Division staff
  - (1) Plans
  - (2) Standard Specifications
  - (3) Supplemental Specifications
  - (4) Special Provisions
  - (5) Other provisions
  - (6) Cross Sections
  - (7) Bid price tabulation
  - (8) Other records as required
- (b) Records developed or obtained in the field
  - (1) Notes from guard stakes
  - (2) Benchmarks
  - (3) Engineering checklist
  - (4) Book of names, addresses, telephone numbers, and other contact information for both Department and Contractor personnel
  - (5) Photographs (particularly for right-of-way and similar problems) and videotapes that record the field conditions before construction begins
  - (6) Any other information required for project administration

### C2.03 Progressive Records.

- (a) Procedure records
  - (1) Letters: Award, approved subcontractors, Schedule of Work, approved sources of materials, minutes of preconstruction meeting, Notice to Proceed, first day of work, instructions to the Contractor, temporary suspensions, Extra Work (price agreements), inspections, and other relevant correspondence
  - (2) Working Day records
  - (3) Weekly reports (see Part H)

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- (4) Change Orders
  - (5) Schedule updates and reports
  - (6) Monthly Reports (see Part H)
  - (7) Photographs and videotapes of work completed or in progress (such as piles in place)
  - (8) Any other information that pertains to administrative aspects of the work
- (b) Material delivery records
  - (1) Tickets
    - a. Quantity control (for example, borrow by weight)
    - b. Quality control (for example, central mixed concrete)
  - (2) Evidence of shipment and inspection (letter by mail)
- (c) Performance records
  - (1) Materials and Research information such as soil density, soil analysis, materials analysis, subgrade pretests, cylinder and core records, and hot-mix production (see Part H)
  - (2) Materials used in field with or without Materials and Research inspection
  - (3) Test pile and bearing pile records
  - (4) Material safety data sheets (MSDS)
  - (5) Mill test reports
  - (6) OSHA inspection reports
  - (7) Any other information pertaining to the Project

**C2.04 Production Records.**

- (a) Pay Item measurements
  - (1) Construction Diary
  - (2) Source documents (miscellaneous) (see Part H)
    - (a) Source documents should be placed in a binder and checked on a regular basis, approximately once a month. Once the District Estimator's Office blue-checks these documents, a copy of the source document is to be retained at the District office. If storage is a problem, scanners can be used to store the documents on a disk. At least two copies of the source documents should be kept in a secure location.
  - (3) Cumulative Record Book
  - (4) Computation books (if applicable)
  - (5) Estimate Books
  - (6) Ticket books with pay tickets
  - (7) Daily reports
  - (8) Traffic control devices (see Part H)
  - (8) Field inspection documentation (for estimated fixed quantity items)
- (b) All of the above production records must be kept in a fireproof file cabinet in the field office or another secure location if there is no field office for the project.

**C2.05 Final Records.**

- (a) As-built plans
- (b) Construction diaries

- (c) Estimate Documents
- (d) Estimate Books
- (e) Change Orders (original copies only)
- (f) Material delivery tickets
- (g) Utility location records (if applicable)
- (h) Source Documents
- (i) Warranties and Guaranties
- (j) Daily and Weekly Reports
- (k) Accumulated Record Book

**C2.06 Storage of Field Records.** In addition to the final records above, the following field records should be turned into the District office upon completion of the Project:

- (a) Inspector's Daily Reports
- (b) Shop Drawings
- (c) Backup Tickets and Tags (for Concrete, Reinforced Steel, Seed, and similar items)
- (d) Any correspondence that has not been copied to District Office
- (e) Utility Records for pay
- (f) Schedule updates and reports

All other records should be disposed of in the field.

## SECTION C3.00 – FILING PRACTICE

**C3.01 General.** Record keeping is an essential part of the responsibilities of the Inspector. If the Inspector is to keep good usable records, the records must be easy to find when they are needed. This requires good filing practice and good office procedures. Due to variations in the type and size of projects, no suggested procedure would exactly fit them all. The information provided in this Section should help the field personnel to keep some semblance of a neat, orderly field-office file.

In addition, no matter what the size or type of Project, there are certain record-keeping and filing techniques that the field personnel should consider using. One such technique is known as double filing. Double filing is the practice of filing copies of the same document in two different locations to make it easier to find the information later and to keep important information together. For example, project correspondence is typically kept in a chronological file that covers the entire project. Correspondence that deals with a change order can also be kept in a change order file. This way, if someone needs to find information about a specific change order, he or she can look in the change order file instead of sorting through the chronological file. At the same time, because the correspondence is also in the chronological file, this file is a complete record of correspondence on the project.

**C3.02 General Instructions for File Drawers.** The Contract file should be stored in the metal file cabinet supplied with the field office. Refer to Figure C-1.

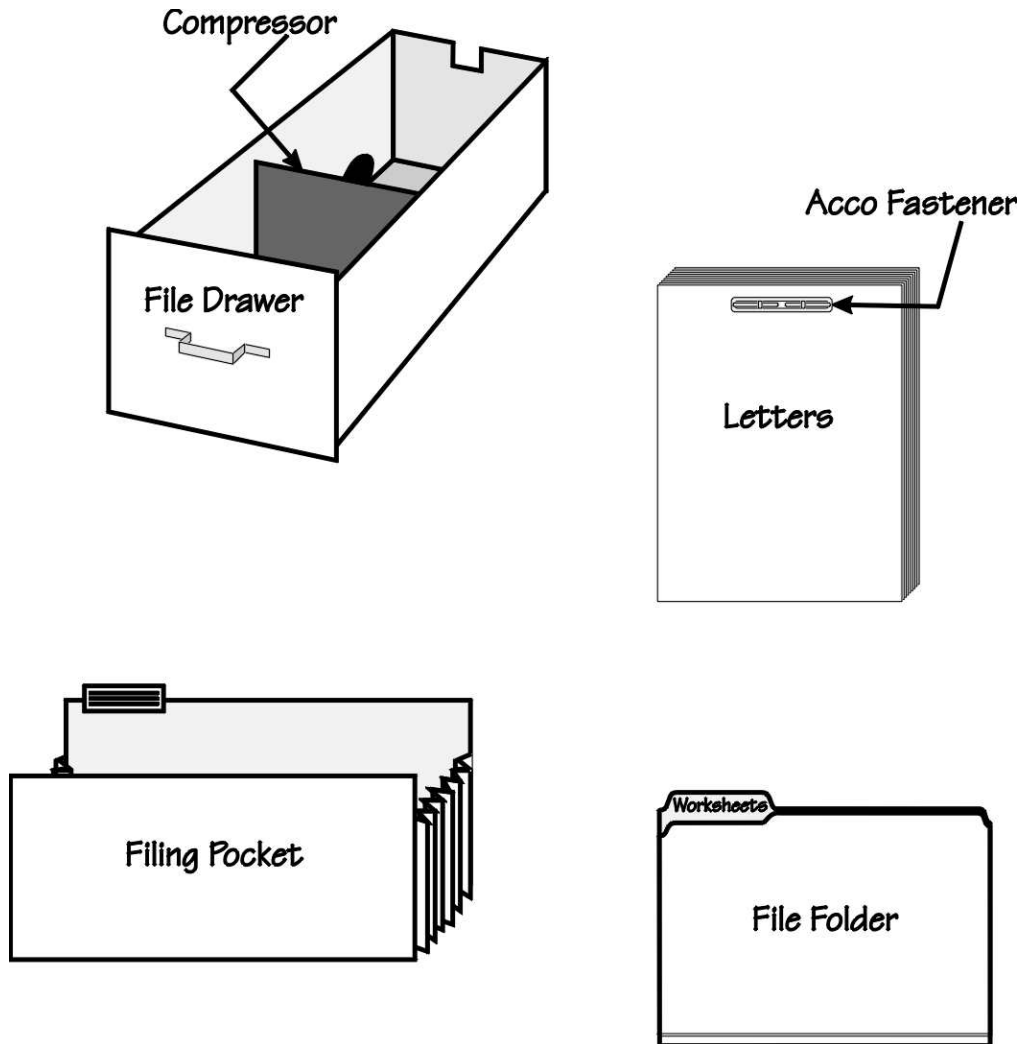
**C3.03 Filing Pockets.** The drawer should first be divided into principle sections or categories. This is done by using expansion filing pockets. Appropriate subject titles should be placed on the top edge of the filing pockets. Do not use the contract number or name on the pockets. The pockets can be reused on other projects. Refer to Figure C-1.

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**C3.04 File Folders.** Filing pockets should be subdivided by using manila file folders. The folders should be labeled in the place provided by subject, but the contract number or name should not be used, as mentioned above.

Letters, reports, and other documents should be placed in the file folders according to the issuing date on the item. These dates should be chronological, with the most recent on top or in the front of the folder. New items should be added each time to the front of the folder.

The ideal packet in a folder will be bound with “Acco” fasteners. Letters will not get lost if this method is used. Refer to Figure C-1.



**Figure C-1: Filing Supplies**

**C3.05 File Categories.** The following outline is to be used in setting up titles for filing pockets and file folders. It should be noted that information given in parentheses is intended as comments for the field personnel and is not to be included in the file labels. Information is also given to indicate whether a file pocket or file folder should be used for each item in order to ensure sufficient room for the documents.

(A) Preconstruction Information

- (1) Preconstruction Meeting (notices & minutes) (folder)
- (2) Schedule of Work (pocket)
- (3) Right-of-Way (agreements & conflicts) (pocket)
- (4) Subcontractors (approvals) (pocket)
- (B) Contract Administration
  - (1) Notice to Proceed (folder)
  - (2) First Day of Work (folder)
  - (3) Suspensions (no need for separate file folders) (folder)
  - (4) Liquidated Damages (one file will be sufficient) (folder)
  - (5) Final Inspection (folder)
  - (6) Progress Meeting Minutes (pocket)
- (C) Field Reports
  - (1) Daily Reports (pocket)
  - (2) Weekly Reports (pocket)
  - (3) Monthly Reports (pocket)
- (D) Construction Correspondence
  - (1) Earthwork
  - (2) Base Course
  - (3) Surface Course and Pavement
  - (4) Structures
  - (5) Incidental Construction
- (E) Change Orders (pocket, with a separate folder for each change order)
- (F) Estimates (pocket, with a separate folder for each estimate)
- (G) Complaints (folder)
- (H) Plan Revision Letters (folder)
- (I) Federal Highway Administration Reports (if a Federal-Aid oversight project)
- (J) Materials Quality Records
  - (1) Materials and Research Correspondence (pocket)
    - a. Correspondence
    - b. Material-source approval (all materials)
  - (2) Soils (pocket)
    - a. Test reports
    - b. Analysis reports
    - c. Borings
    - d. Stabilization
    - e. Compaction reports
    - f. Tickets
    - g. Miscellaneous
  - (3) Drainage (pocket)
    - a. Pipe
    - b. Castings
    - c. Grating
    - d. Brick
    - e. Miscellaneous
  - (4) Portland Cement Concrete (pocket)
    - a. Test reports

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- b. Tickets
  - c. Miscellaneous
- (5) Bituminous Concrete (pocket)
  - a. Test reports
  - b. Tickets
  - c. Miscellaneous
- (6) Surface Treatment (pocket)
  - a. Test reports
  - b. Asphalt tickets
  - c. Aggregate tickets
  - d. Miscellaneous
- (7) Steel (pocket)
  - a. Test reports
  - b. Shipping statements
  - c. Miscellaneous
- (8) Piling (pocket)
  - a. Test reports
  - b. Miscellaneous
- (9) Coatings (pocket)
  - a. Testing
  - b. Miscellaneous
- (10) Miscellaneous File (pocket)
  - a. Test reports

## SECTION C4.00 – ESTIMATE BOOKS

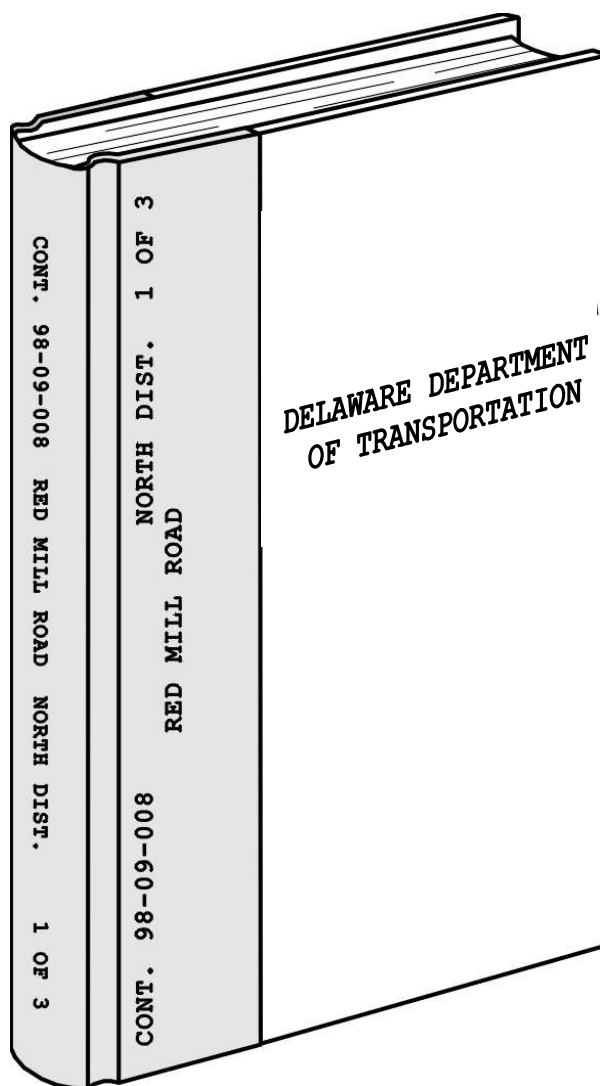
**C4.01 General.** All payments made to the Contractor by the Department on construction contracts are supported in detail in 9" x 12" (240 x 300 mm) books called Estimate Books. In the past, the Department used additional books called computation books. That practice has been changed; however, projects that began before this change in policy may still be using computation books. If this is the case, all general references in this Manual to Estimate Books also apply to computation books.

Sample pages from an Estimate Book are shown in this Section. These are the basic records used by the Department, and, when the Contract is completed, they are filed temporarily in the District office before being archived.

Because these are the basic records of the quantities used for the Project, they should be kept in a neat, legible, and systematic order. Estimate Books are the legal record regarding where and how much material was used on the Project and are subject to audit by anyone, including representatives of FHWA.

Additional information on estimates can be found in Section B12.00.

**C4.02 Book Set-Up.** The Estimate Book should be set in the following manner. The Contract number, name of the Contract, and the District should be lettered on the front face of the binding near the hinge. This should also be repeated on the spine or backbone of the book. All lettering must be done very neatly in permanent ink. Refer to Figure C-2.



**Figure C-2: Estimate Book Cover Set-up**

Ordinarily, a single page should be used in the Estimate Book for recording each item of the Contract. For larger jobs, however, a double facing page, left and right, may be used. In setting up the Estimate Book, black ink should be used to place the proposed quantity for that item on these pages. Proposed quantities should be placed in the book carefully and neatly.

The copied bid tabulation for each contract should be checked against the executed copy of the proposal for accuracy. When this is done, a copy of the bid tabulation must be pasted or taped inside the front cover page of the Estimate Book.

The first ruled page or pages in the Estimate Book are to be used to record each Working Day or Calendar Day. Enough space should be provided for this Working Day entry to provide about twice the number of days required by the Contract, using three columns to a page.

Figure C-3 shows a method for tracking Working Days in the Estimate Book. Using a setup similar to the one shown in this example, approximately 140 days per page can be accommodated in the Estimate Book.

Estimate Books are expensive. Do not hesitate to use all the space actually needed, but do not waste the books.

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All books used for the Contract are to be serially numbered; for example, if the work took five books, they should be numbered 1 of 5, 2 of 5, etc. If any books are used as ticket books, they are not to be included in this numbering system.

For items that have more than one page of sketches and figures, the item should be “recapped” and entered on the last page of that item, indicating the subtotal for each page, and then summed to give the item total. The recapped page numbers are to be listed on the primary Estimate Book page and the recapped page in turn should list the Estimate Book page number.

One page should be reserved in the front of the Estimate Book for general information about the Contract. The information listed should include the names of all Inspectors who worked on the Project and the dates when they worked.

**C4.03 General Instruction for Entries.** Soft lead pencils should not be used in the Estimate Books. A good quality 2H or HB pencil is recommended since it will not smudge easily.

It is important that the name of the person who performs the calculations for the quantities and the person who makes entries in the Estimate Books be recorded. For this purpose, the names or initials of persons making the entries and calculations should be entered on each page or in spaces provided for this purpose.

Red pencils are not permitted to be used in the books by anyone in the Districts. This color is reserved for the District Estimating Section audit only.

All sketches should be as neat as possible. No attempt should be made to draw them to scale, but they should give an indication of the general shape of the item that they represent. Generally, they should be large, just large enough to contain the dimension figures required without crowding. The sketches should always be placed to the top or to the left of the calculations that go with those sketches.

Items that don’t require sketches, such as patching curb and joint sealing, need only station counts and dimensions.

Entries in Estimate Books must not be erased and pages must not be removed from Estimate Books at any time. Corrections should be made only by crossing out the mistake.

**C4.04 Estimated Quantities vs. Final Quantities.** The decimal extension of quantities entered in an Estimate Book will indicate whether the figure is an estimated quantity or a final quantity. Estimated quantities shall be rounded to the nearest whole number (e.g. 24 yd<sup>3</sup>). Final quantities shall be shown using at least a two digit decimal extension (e.g. 24.25 c.y.). All items are to be measured in the field to two (three for metric) decimal places, and then calculated to three (four for metric) decimal places when calculations are required. Final payment will be made by rounding calculated values to two (three for metric) decimal places. A typical estimate book item page is shown in Figure C-4 (C-4M). Whenever items are complete, such as excavation for structures or foundation piling, those items are to be calculated into final quantities. A sample daily quantity sheet from the cumulative record book is shown in Part H. The Material and Research Section develops specific information on the density of the materials from each approved source. This information may be used in calculating estimated quantities for progress payments. Estimated quantities are not to be used for final payment.

**C4.05 Specific Item Instructions.** The following are estimate preparation instructions related to particular phases or items.

- (a) *Concrete Pavement Calculations.* There are certain instructions that should be followed when calculating concrete pavement quantities. The area of the pavement should be figured and kept in square yards (square meters). Measurements must be taken down the centerline of concrete pavement. Measurements must be made to the nearest 1/4" (5 mm). Dimensions for the sketches should be shown the same way, keeping the mainline paving one unit or group. The odd-shaped sections of pavement should then be grouped together. Appendix B in Part J of this Manual contains formulae for calculating non-symmetrical geometric shapes.
- (b) *Bar Reinforcement Calculations.* Tabulations for bar reinforcement should be grouped according to size. Each size should be grouped separately, obtaining the length for that entire section and size, and then and only then reducing the figure to pounds (kilograms). In other words, for an entire table of bars having the same diameter, the weight of those bars should be calculated only once for the group. Figure C-5 shows a sample bar reinforcement tabulation and calculation.

**C4.06 District Responsibilities.** The District preparing and submitting an estimate to the Department Finance Section for audit or payment first must be satisfied that the figures are reasonably accurate. This should be accomplished by a system of checking. Each estimate entry must be calculated by a capable person. This entry must be checked completely and thoroughly by at least one other capable, responsible person.

The measuring, sketching, and calculating for all Pay Items to be entered into the Estimate Book is done by the Inspector. On large projects, this information is entered into the Estimate Book by the Project bookkeeper. On projects that do not have a bookkeeper, the Inspector should enter the information. The Estimating Section should check these entries for accuracy. The checking of estimated quantities and sketches should consist not only of going over the mathematical extensions of figures, but of checking the figures against the Plans. The formulas used should be checked for their applicability. Errors can often be spotted by reviewing the sketches to verify that their component dimensions are realistic.

The signature of the District Construction Engineer on the Pay Estimate Header Sheet, along with the signatures of the field personnel, indicates that the Construction Engineer is reasonably satisfied that the estimate has been prepared carefully and accurately and has been checked satisfactorily. Estimates are prepared and sent for audit and payment to the Department Finance Section from all the Districts. The Finance Section cannot be expected to find every error; therefore, the Districts must prepare construction estimates with the utmost care and responsibility.

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Date	Time Charged	Accum. Calendar Days	Remaining Calendar Days	Comments	Date	Time Charged	Accum. Calendar Days	Remaining Calendar Days	Comments
4/1	1	1	71		5/8	1	36	36	Saturday
4/2	1	2	70		5/9	1	37	35	Sunday
4/3	1	3	69	Saturday	5/10	1	38	34	
4/4	1	4	68	Sunday	5/11	1	39	33	
4/5	1	5	67	Rain	5/12	1	40	32	
4/6	1	6	66		5/13	1	41	31	
4/7	1	7	65		5/14	1	42	30	
4/8	1	8	64	Rain in PM	5/15	1	43	29	Saturday
4/9	1	9	63		5/16	1	44	28	Sunday
4/10	1	10	62	Saturday	5/17	1	45	27	
4/11	1	11	61	Sunday	5/18	1	46	26	
4/12	1	12	60		5/19	1	47	25	
4/13	1	13	59		5/20	1	48	24	
4/14	1	14	58		5/21	1	49	23	
4/15	1	15	57		5/22	1	50	22	Saturday
4/16	1	14	58	Holiday	5/23	1	51	21	Sunday
4/17	1	15	57	Saturday	5/24	1	52	20	
4/18	1	16	56	Sunday	5/25	1	53	19	
4/19	1	17	55		5/26	1	54	18	
4/20	1	18	54		5/27	1	55	17	
4/21	1	19	53	Hard Rain	5/28	1	56	16	
4/22	1	20	52	Wet grade	5/29	1	57	15	Saturday
4/23	1	21	51		5/30	1	58	14	Sunday
4/24	1	22	50	Saturday	5/31	1	59	13	Holiday
4/25	1	23	49	Sunday	6/1	1	60	12	
4/26	1	24	48		6/2	1	61	11	
4/27	1	25	47		6/3	1	62	10	
4/28	1	26	46		6/4	1	63	9	
4/29	1	27	45		6/5	1	64	8	Saturday
4/30	1	28	44		6/6	1	65	7	Sunday
5/1	1	29	43	Saturday	6/7	1	66	6	
5/2	1	30	42	Sunday	6/8	1	67	5	Rain in AM
5/3	1	31	41	Utilities	6/9	1	68	4	
5/4	1	32	40	Utilities	6/10	1	69	3	
5/5	1	33	39		6/11	1	70	2	
5/6	1	34	38		6/12	1	71	1	Saturday
5/7	1	35	37		6/13	1	72	0	Sunday

Figure C-3: Sample Calendar Day Records

\$30.00

\* NOTE: For those items where payment is made per ticketed quantity, a daily log should be maintained for materials received and accepted.

### Figure C-4: Typical Estimate Book Item Page For English



The bar designation shown on the Plans and Specifications will be either in English or metric units. The industry convention in the manufacture of reinforcement bar is to use the metric bar designation. The bar designation is indicated by raised numbering on each bar.

ITEM 20 - BAR REINFORCEMENT						
Mark	Quantity	Length (ft)	#4	#5	#6	#8
F 809	36	16.75				603.000
W 601	24	35.67			856.080	
P 406	12	16.00	192.000			
W 601	48	3.25			156.000	
P 503	20	12.00		240.000		
F 503	30	22.50				675.000
P 403	42	8.75	367.500			
P 502	38	9.42		357.960		
P 607	26	7.50			195.000	
F 805	18	6.25	112.500			112.500
W 502	8	4.92		39.360		
P 607	16	10.58			169.280	
			559.500	637.320	1376.360	1390.500
	Bar Size No	Nominal Unit Weight (lbs/ft)	Length (ft)	Weight (lbs)	Total lbs.	
	4	0.668	559.500	373.746		
	5	1.043	637.320	664.725		
	6	1.502	1376.360	2067.293		
	8	2.670	1390.500	3712.635		
				6818.398		

**Figure C-5: Sample Bar Reinforcement Tabulation**

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The bar designation shown on the Plans and Specifications will be either in English or metric units. The industry convention in the manufacture of reinforcement bar is to use the metric bar designation. The bar designation is indicated by raised numbering on each bar.

ITEM 20 - BAR REINFORCEMENT						
Mark	Quantity	Length (m)	13M	16M	19M	25M
F 809	36	5.11				183.960
W 601	24	10.87			260.880	
P 406	12	4.88	58.560			
W 601	48	1.00			48.000	
P 503	20	3.66		73.200		
F 503	30	6.86	205.800			
P 403	42	2.67		112.140		
P 502	38	2.87			109.060	
P 607	26	2.29				59.540
F 805	18	1.91	34.380			
W 502	8	1.50		12.000		
P 607	16	3.22			51.520	
			298.740	197.340	469.460	243.500
	Bar Size No	Nominal Unit Mass (kg/m)	Length (m)	Mass (kg)		
	13M	0.994	298.740	296.948		
	16M	1.552	197.340	306.272		
	19M	2.235	469.460	1049.243		
	25M	3.973	243.500	967.426		
				2619.888	Total kilograms	

Figure C-5M: Sample Bar Reinforcement Tabulation

[illegible]

## NOTES

This image shows a full page of blank, lined paper. It features approximately 28 horizontal blue or grey lines spaced evenly apart, typical of notebook paper. The lines extend across the entire width of the page, leaving small margins at the top and bottom. There are no vertical lines, text, or other markings on the page.

## This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

## NOTES

[illegible]

[illegible]